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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/915,963	07/26/2001	George Earl Peterson	18	8322
7590	03/20/2006		EXAMINER CHEN, SHIH CHAO	
Michael J. Urbano, Esq. 1445 Princeton Drive Bethlehem, PA 18017-9166			ART UNIT 2821	PAPER NUMBER

DATE MAILED: 03/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/915,963

Applicant(s)

PETERSON, GEORGE EARL

Examiner

Shih-Chao Chen

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5-11, 13, 15-21 and 23-25 is/are rejected.
- 7) ☒ Claim(s) 4, 14 and 22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The request filed on Nov. 28, 2005 for Reopen Prosecution under 37 CFR 41.50(b) based on Application No. 09/915,963 is acceptable. A final office action on the Reopen Prosecution follows.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 5-11, 13, 15-21 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wicks et al. (US H2016 H) in view of Ogot et al. (U.S. Patent No. 5,648,787), and further in view of Kraus (J.D. Kraus, "Antenna", 2<sup>nd</sup> ED., McGraw Hill, Inc., New York (1988), pp759-760).

Regarding claim 1, Wicks et al. teaches in figures 1-5 an antenna structure comprising: at least one antenna element (mono-blade antenna element), that at least one antenna element having at least one taper (See Figures 4-5); and a ground plane (ground plane) coupled with the at least one antenna element (mono-blade antenna element).

Regarding claim 3, Wicks et al. teaches in figures 1-5 the antenna structure wherein the taper comprises an exponential profile.

Regarding claim 5, Wicks et al. teaches in figures 1-5 the antenna structure wherein the at least one antenna element (mono-blade antenna element) is positioned

Art Unit: 2821

at an angle from the ground plane (ground plane).

Regarding claim 6, Wicks et al. teaches in figures 1-5 the antenna structure wherein the angle is about 90 degrees with respect to the x-, y- and z-axes (See Figure 4).

Regarding claim 7, Wicks et al. teaches in figures 1-5 the antenna structure wherein the at least one antenna element (mono-blade antenna element) is coupled with the ground plane (ground plane) by means of an unbalanced impedance (coaxial transmission line feed).

Regarding claim 8, Wicks et al. teaches in figures 1-5 the antenna structure wherein the unbalanced impedance (coaxial transmission line feed) comprises a coaxial cable.

Regarding claim 9, Wicks et al. teaches in figures 1-5 the antenna structure wherein a first conductor of the unbalanced impedance (See Figure 4) mechanically couples the at least one antenna element (mono-blade antenna element) with the ground plane (ground plane).

Regarding claim 11, Wicks et al. teaches in figures 1-5 an antenna structure comprising: an array of at least two antenna elements (See Figure 5), each antenna element (mono-blade antenna element) having at least one taper;; a ground plane (ground plane); and an unbalanced impedance (coaxial transmission line feed) for coupling the array of at least two antenna elements with the ground plane (ground plane) (See col. 4, lines 7-13).

Regarding claim 13, Wicks et al. teaches in figures 1-5 the antenna structure

wherein the taper of at least one antenna element of the array comprises an exponential profile.

Regarding claim 15, Wicks et al. teaches in figures 1-5 the antenna structure wherein each antenna element (mono-blade antenna element) of the array is positioned at an angle from the ground plane (ground plane).

Regarding claim 16, Wicks et al. teaches in figures 1-5 the antenna structure wherein the angle for each antenna element is about 90 degrees with respect to the x-, y- and z-axes (See Figure 4).

Regarding claim 17, Wicks et al. teaches in figures 1-5 the antenna structure wherein the unbalanced impedance (coaxial transmission line feed) comprises a coaxial cable.

Regarding claim 18, Wicks et al. teaches in figures 1-5 the antenna structure wherein a first conductor of the unbalanced impedance (See Figure 4) mechanically couples each antenna element of the array with the ground plane (ground plane).

#### Claim Rejections - 35 USC f f 03

Wicks et al. teaches every feature of the claimed invention above except for the symmetrical finite ground plane; and symmetrical disk shaped finite ground plane.

Ogot et al. teaches in figure 3A the symmetrical disk shaped finite ground plane (210, 250).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the metal ground plane as shown in Wicks et al. by

Art Unit: 2821

using the symmetrical disk shaped finite ground plane as taught by Ogot et al. in order to maximize the surface area of the ground plane perpendicular to the transmission element, and provides a uniform transmission pattern (See col. 4, lines 66-67 and col. 5, lines 1-3).

Wicks et al. and Ogot et al. teach every feature of the claimed invention except for the at least one antenna element comprises a traveling wave antenna supporting a phase velocity greater than the speed of light; and a slow wave antenna to widen the directivity of the antenna structure.

Kraus teaches in figures 16-41 & 16-42 the at least one antenna element (Leaky-wave antennas) comprises a traveling wave antenna supporting a phase velocity greater than the speed of light; and a slow wave antenna (Surface-wave antenna) to widen the directivity of the antenna structure.

In view of the above statement, it would have been obvious to one having ordinary skill in the art at the time the invention was made by using leaky-wave antenna or surface-wave antenna as taught by Kraus in order to have the structure carries a fast wave ( $v > c$ ) or a slow wave ( $v < c$ ) (See pp759-760).

***Allowable Subject Matter***

4. Claims 4, 14 & 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter: the prior art does not teach or suggest the antenna structure supports a cigar-

Art Unit: 2821

like directional three-dimensional beam pattern and a butterfly wing-like directional three-dimensional beam pattern as required by claims 4, 14 and 22.

***Response to Arguments***

6. Applicant's arguments with respect to claims 1-25 have been considered but are moot in view of the new ground(s) of rejection.

***Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shih-Chao Chen whose telephone number is (571) 272-1819. The examiner can normally be reached on Monday-Friday from 7 AM to 4:30 PM, First Fri. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shih-Chao Chen  
Primary Examiner  
Art Unit 2821

*Shih-Chao Chen*  
**SHIH-CHAO CHEN**  
**PRIMARY EXAMINER**

Application/Control Number: 09/915,963  
Art Unit: 2821

Page 7

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March 8, 2006